

amplifier . important: 2 GHz broadband .olithic IF amplifiers are now readily available with noise figures below 3 dB.

9.5. For the purposes of planning, the following features and parameter values used for existing DTH services are assumed (though MVDS services are in no way obliged to follow these figures):

- a. ASSUMED INPUT SIGNAL AT 1ST IF: the modulation characteristics are those of the current DTH services, for example, with the PAL system used for the video signal, any additional sound transmissions may conform to the Wegener "Panda I (1600 series)." In other cases the system might be D2MAC, as specified by the EBU: this is not reproduced here.
- b. INPUT SIGNAL LEVEL (nominal $Z_{in} = 75$ ohms):
 - i. to reach the fm demodulation threshold -60 dBm;
 - ii. to achieve a 48 dB weighted video signal to noise ratio -60 dBm;
 - iii. maximum for a single signal -15 dBm;
 - iv. maximum for 16 equal level signals -30 dBm.
- c. TUNING RANGE: in terms of nominal vision carrier frequencies:

current production:	0.95 to 1.75 GHz;
future production:	0.95 to 2.00 GHz
- d. TUNING ERROR (accuracy of set top box and synthesizer): for the worst selected channel ± 0.25 MHz.
- e. NOMINAL VIDEO CARRIER FREQUENCY ERROR: due to received signal or outdoor unit at which AFC limit is reached: ± 5 MHz. (NOTE: exceeding this frequency error may be such that ambiguity between the channels occurs).
- f. REJECTION OF $N \pm 2$ ODD OR EVEN CHANNELS: if an energy mask corresponding to that of the ASTRA transmission were used: 25 dB.
- g. MODULATED UHF OUTPUT: CCIR System I PAL, selectable sound source where appropriate, level at least 1 mV into nominal 75 ohms. Frequency range channel 32 to 40.
- h. BASE BAND VIDEO OUTPUT:
 - i. Bandwidth 25Hz to 10.5MHz, within 2 dB to 8.4 MHz, within 3 dB 8.4 to 10.5 MHz.
 - ii. Group delay error less than 25 ns.
 - iii. Peak to peak level nominally 1V.
 - iv. Nominal output impedance 75 ohms, return loss at least 20 dB.
 - v. De-emphasis, selectable CCIR REC 405-1 or EBU MAC Tech. 3258.
- i. BASEBAND SOUND OUTPUT: corresponds to European Standard EN50049 "PERITELEVISION".
- j. LOCAL OSCILLATOR FREQUENCIES FOR MVDS RECEIVERS: as noted in paragraph 8.9, the local oscillator frequencies should preferably be within the frequency band allocated for the service, and it is proposed that the nominal local oscillator frequency for receivers tuning the lower frequency channel groups should be 42.44925 GHz, and the corresponding frequency for the

two upper channels groups should be 40.51 MHz. The signal/first IF will be as follows:

Channel number	Local oscillator frequency (GHz)	Centre frequency of first IF (MHz)
1	42.44925	1914.25
63	42.44925	999.75
2	42.44925	1899.50
64	42.44925	985.00
65	40.550	985.00
127	40.550	1899.50
66	40.550	999.75
128	40.550	1914.25

9.6 The WARC 77 template will be used as a basis for the receiver antenna characteristics. The stability of the outdoor unit is likely to result in a maximum video carrier frequency tuning error of ± 5 MHz.

10 BASIC TRANSMITTER CHARACTERISTICS

10.1. The transmitter antenna needs to be at a height sufficient to provide adequate penetration in the service area, but not high enough to cause significant interference to other service areas.

10.2. High transmitter powers are difficult to achieve above 40 GHz. This factor affects the choice of modulation for MVDS transmissions. FM transmissions (using DBS modulation parameters) require 24 dB lower carrier-to-noise ratio than AM/VSB for the same picture noise, and do not need the same linear amplifier as required for AM/VSB. As a result AM/VSB is not currently feasible. FM needs more than twice the spectrum of a comparable system, however, using AM/VSB.

10.3. The most readily available source of RF power at millimetric frequencies is the free running Gunn Oscillator. These can readily be obtained with output powers in the range of +20 to +23 dBm. It has the advantage that FM can be generated easily using a varactor diode in the oscillator cavity.

10.4. It would be possible to develop Travelling Wave Tube Amplifiers at these frequencies with powers approaching +50 dBm, but only at an expense which would require all the channels to pass through one amplifier. However, with the amplifier output adjusted to reduce intermodulation products between channels to acceptable levels, the output power per channel would be similar to that of a Gunn Oscillator. Solid state amplifiers are now becoming available with comparable output powers to Gunn Oscillators, but not yet at comparable costs. At lower frequencies, the normal technique for transmitting several channels together would be to use separate power amplifiers followed by a resonant combiner. Each section of the combiner is a filter which must pass the whole of the wanted channel while rejecting adjacent channels. At 40 GHz it may just be possible to combine 20 channels into 2 GHz, but not into 1 GHz. A good

alternative at 40 GHz is to use a separate antenna for each channel - broad beamwidth antennas needed for the transmitter being very small. One consequence of using one antenna per channel is that it becomes difficult to provide omni-directional coverage from a single system, because the antenna for one channel will tend to obstruct the radiation from others. For sector coverage, an antenna with a horizontal beamwidth of about 64° (such as a sectoral horn) is about optimum, which would have a gain of about 15 dBi. Under conditions of maximum rain attenuation, this gives a roughly circular coverage, with the transmitter on the circumference. If there is one antenna per channel, then it would be convenient to mount each transmitter behind its antenna. This is also important because the attenuation of standard rectangular or elliptical waveguide approaches 1 dB per metre. Circular waveguide can be specially designed to operate in a mode which has a much lower loss. Flexible wave guide which achieves this has been developed but is not thought to be commercially available.

10.5. If best use is to be made of the spectrum, then the channels must be as closely packed as possible. It will be important that they do not drift in centre frequency. Since currently available Gunn Oscillators have a thermal drift of several MHz per degree centigrade it will be necessary to apply some stabilization. It is possible to control the temperature of a Gunn Oscillator to a degree or so, but a better method is closed loop frequency control.

10.6 A summary of the 40 GHz MVDS technical parameters together with typical link budgets for 40 GHz omnidirectional and sector coverage antennas are given at Appendix F.

11. POSSIBLE EQUIPMENT COSTS

11.1. Since the development of MVDS is still very much in its infancy, the costs quoted in this section (which have been supplied to the group over the last twelve months) are very tentative, and are given to give only general guidance on possible costs. It should be borne in mind that a number of pieces of equipment needed for MVDS operations are still at the development stage, and initial equipment prices may include significant levels of development costs.

11.2. Initial estimates, based on 10,000 pieces suggest that a 25 channel (+ 5 on hotstandby) transmitter, 64° sector antenna with 15dB gain would cost between £27,500 and £47,500. In order to meet the transmitter specification limits on spurious emissions, manufacturers may need to include low pass filtering at the transmitter output. Waffle Iron filters have been suggested at a cost of £100-£500 depending on production runs.

11.3. For receivers, initial estimates based on production of 100,000 units suggested prices between £200 and £350 for the set top receiver and access control management, though later estimates suggested that this could be reduced.

11.4. It was suggested within the Group that a complete outdoor unit of 150 mm³, based on a 32 dBi antenna and no LNA (NF of 10-12 dB), would be expected to sell at £50-100 (assuming production of at least 1000). A 200 mm³ unit with a 36 dBi antenna would be about £15 more. A unit with an LNA (NF of 6.5 dB using HEMT's) would cost about £70 more. It has been

suggested that the timescale for production of such systems would be nine months from the start date.

11.5. Estimates of the costs of a complete MVDS system might be as follows:

Cost per transmitter (25 channels + 5 on hotstandby) ¹	£27,500 - £47,500 ²
Average outdoor reception unit	£110
Average installation costs	£40
Indoor unit (Videocrypt IRD)	£115
TOTAL RECEPTION COSTS	£265

¹ This excludes master head and equipment, encode/decode, installation etc.

² Maximum cost of transmitter.

11.6. By way of comparison with cable costs it is assumed that the cost of a typical fully underground cable system is £300 per home passed, plus £100 per subscriber installed. A cable system with 33.3% penetration results in a cost per connection of £1000 (ie the costs of three homes passed plus one installation). For a system with 50% penetration the cost is £700 per connection (ie the costs of two homes passed plus one installation). However since a cable system of this type would be able to support telecommunications in addition to entertainment by using an overlay network in the same duct system, the effective capital cost of the entertainment network would be approximately 60% of these figures, ie £600 per connection with 33.3% penetration, and £420 per connection at 50% penetration.

11.7. In the light of the MVDS reception costs quoted in the table above, for MVDS to be competitive with cable delivery, transmitter costs per subscriber would need to be less than £335 where there is 33.3% penetration (£600 - £265) and less than £155 where there is 50% penetration (£420 - £265). This means that the number of subscribers served by a transmitter needs to be between 82 and 142 (compared with cable at 33.3% penetration) or between 177 and 306 (compared with cable at 50% penetration) to equate with per capita cable costs. In other words, a transmitter would need to be able to serve a community of 426 to 612 to be competitive with cable delivery.

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List of Appendices

- A. List of members of the Group - (see para 3.1)
- B. ITC Guidance Notes - (see para 6.1)
- C. CEPT recommendation - (see para 7.1)
- D. List of unfranchised towns - (see para 8.1)
- E. Provisional channel plan - (see para 8.3)
- F. 40 GHz technical parameters and typical link budgets
- (see para 10.6)
- G. Glossary of Terms

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Independent Television Commission

Appendix B

LICENCES FOR LOCAL DELIVERY SERVICES

GENERAL NOTES FOR THE GUIDANCE OF FRANCHISE APPLICANTS

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PART I - INTRODUCTION

1.01 The local delivery franchise awarded by the Independent Television Commission is the successor to the cable franchises awarded by the Cable Authority. It is granted under the terms of Part II of the Broadcasting Act 1990. It licenses the provision by means of a system capable of serving more than 1000 homes, using either cable or a microwave video distribution system (MVDS) or both, of a service consisting of the delivery of television and radio channels, though certain services (eg broadcast relay alone) are exempt from licensing.

1.02 Depending upon the circumstances, the award of a local delivery franchise will involve the issue of two different licences and sometimes a third:

- a) a local delivery service licence granted by the ITC under the Broadcasting Act 1990; and
- b) a licence for the running of a telecommunication system issued by the Department of Trade and Industry under the Telecommunications Act 1984; and
- c) (if the service is to involve the use of MVDS) a licence issued by the Radiocommunications Agency under the Wireless Telegraphy Act 1949.

1.03 One application made to the ITC will be treated as an application for all necessary licences.

1.04 These general notes will be supplemented in the case of each individual franchise by a franchise specification which will set out the area for which applications are invited, the deadline for applications, the available frequencies for MVDS, the minimum tender price, the appropriate fees and other information specific to that franchise.

1.05 The detailed notes which follow are divided into four parts:

Part II - the licensing requirements and the franchising process.

Part III - regulation under the Broadcasting Act and the conditions and restrictions under which the ITC's licences will be granted.

Part IV - the Department of Trade and Industry's licensing of telecommunication systems.

Part V - the Radiocommunications Agency's licensing of

wireless telegraphy systems.

1.06 These notes do not purport to explain all the relevant provisions of the Broadcasting Act 1990 and cannot be taken as modifying the effect of the statute. Applicants should assure themselves that they understand how the provisions of the Act will affect them and the business they intend to undertake. While guidance is also given about licensing under the Telecommunications Act, it should be noted that such licensing would reflect the particular applicant's proposals and the details could differ between applicants. Applicants are strongly urged to speak to the DTI (071 215 1763) about their proposed systems at an early stage.

PART II - THE LICENSING REQUIREMENTS AND THE FRANCHISING PROCESS

What needs a licence

2.01 A local delivery service licence is required for a service which embraces all the following elements:

- a) the use of a cable or MVDS system, or a combination of the two, and
- b) available in an area of more than 1000 homes in the United Kingdom, and
- c) delivering for simultaneous reception in two or more of those homes a television service other than BBC, ITV, Channel 4 or S4C.

2.02 For the removal of doubt, a local delivery service licence is not needed

- a) in respect of any system available to 1000 homes or fewer: cable systems of this kind require only a licence under the Telecommunications Act 1984, application for which should be made direct to the Office of Telecommunications (OfTel).
- b) in respect of a service which delivers only the terrestrial television broadcasting channels and any sound-only service (whether or not a terrestrial broadcasting service).
- c) where a cable diffusion licence is already in force for the service concerned.

Services provided in category (b) above are subject to a class licence issued under the Telecommunications Act 1984.

Identification of franchise areas

2.03 The ITC will be guided in its franchising programme by the interest expressed to it in new local delivery franchises and the areas they might cover. While the ITC reserves the right to advertise areas different from those suggested to it by prospective applicants, it does not presently envisage advertising areas for which no interest has been expressed by a potential applicant.

2.04 The ITC will undertake its franchising programme on the basis of granting one licence in any one area. It does not propose for the foreseeable future to grant franchises which will be in competition in the same area, nor will it wish to grant local delivery franchises covering areas which are already the subject of a cable franchise. Prospective applicants should note the statements contained in the Government's White Paper, 'Competition and Choice: Telecommunications Policy for the 1990s' concerning British Telecom and the conveyance or provision of entertainment services to the home.

The franchising process

2.05 In summary, the process provided by the Broadcasting Act entails the following stages:

- a) having identified a prospective area as described above, the ITC advertises that area and invites applications for the licence, specifying the frequencies that would be available for MVDS if required; the closing date for the receipt of applications; the application fee to be paid by all applicants; and the minimum price which a successful applicant would be required to pay.
- b) applicants submit their applications in accordance with the requirements set out more fully below and specifying in particular the amount of their cash bid for the licence.
- c) the ITC publishes the names of applicants and certain details of their applications.
- d) the ITC may seek additional information from applicants if that course appears necessary.
- e) the ITC will award the licence to the highest bidder provided that
 - i) he is a fit and proper person
 - ii) his proposed telecommunication system is acceptable to the telecommunication licensing authorities, and, if appropriate, the wireless telegraphy licensing authorities.
 - iii) the ITC is satisfied that the applicant would be in a financial position to maintain the service throughout the period of the franchise.
 - iv) the source of funds for the venture is not such that the grant of the licence would be against the public interest.

- v) exceptional circumstances do not point to another applicant being preferred. Exceptional circumstances can in particular relate to the extent of the coverage of the franchise area which any applicant may propose if it is substantially greater than proposed by others.

Duration of licence and its renewal

2.06 A local delivery licence will run for 15 years from the date on which the service under the licence is started, subject to the proviso that it will not last longer than a period of 17 years from the ITC's decision on the award of a franchise. The Act provides that at any time after the licence has been in force for 10 years, the licensee may apply for its renewal and this will normally be granted, on financial terms determined by the ITC. If the licensee decides at that point that the ITC's terms are not acceptable, the franchise will be opened to competition and the licensee may submit an application containing what he thinks is the appropriate cash bid.

Tender payments

2.07 The first part of the tender is the percentage of qualifying revenue payable by the applicant over the duration of the licence. On advertising a particular licence, the ITC will specify the percentage(s) of qualifying revenue (PQR) which are to be paid in each of the accounting periods for which the licence is in force. The ITC may set different percentages for different accounting periods and may set the percentage for any period at nil. Once it has set the percentages at the outset, the ITC has no power subsequently to vary them, whatever the changing circumstances.

2.08 The second part of the tender is the cash bid which each applicant is required to make. The bid is expressed as a sum to be paid in the first full calendar year of the licence period. If the licence period commences, for example, in mid 1995, the cash bid would be the amount payable in respect of the calendar year 1996 and so on. The cash bid payable will be the amount shown in the form at Annex 3 which should be based on prices current in the first complete calendar year of the licence, ie 1996 prices in the example above. (The cash bid should also be shown, but in 1994 prices, on the tables at Annex 2.1) In considering cash bids under Section 76(1) of the Act, the ITC may have regard only to the amount of the cash bid, and not to the calendar year in respect of which, on the applicant's proposals, it would be first payable. The cash bid, indexed for inflation, must be paid in each succeeding year. The appropriate adjustment for inflation will be the percentage change in the retail prices index (RPI) between the month of November in the year preceding the relevant year and the month of November preceding the first complete calendar year.

2.09 Where the cash bid (adjusted for inflation) is more than £100,000, the bid will be paid in equal monthly instalments throughout the relevant year, as will the PQR payments described

above. The ITC has no power subsequently to agree to the modification of the bid. Where there are two or more equal highest bids, the ITC will invite those applicants to submit further cash bids.

2.10 The proceeds from tender payments accrue to the Consolidated Fund and do not form part of the ITC's revenues. The ITC has been informed by the Department of National Heritage that the Inland Revenue will treat the cash bid as a revenue expense and that it will therefore be tax deductible. Applicants are reminded, however, that the relevant authority on taxation issues is the Inland Revenue, and not the ITC. Applicants are advised to seek their own advice on taxation and other matters.

Qualifying revenue

2.11 Qualifying revenue is defined in Section 77(2) of the Broadcasting Act 1990. It applies to all revenue received by the licensee, or connected persons, or any person authorised by the licensee under Section 73(5), that is derived from the delivery of programme services listed in Section 72(2).

2.12 The services listed include television and sound broadcasting services, any non-domestic satellite service, any licensable programme service, and any licensable sound service. Revenue earned from advertisements, sponsorship, subscriptions or pay-per-view is defined as qualifying revenue, as are fees received from a programme provider in respect of the inclusion of the latter's programmes in the licensee's service.

2.13 Qualifying revenue also includes revenue earned from the use of the telecommunications system and the sale or hire of equipment necessary for the reception of the licensee's service. Where the telecommunications system and/or associated equipment is also used for the purposes of conveying telephony services or non-licensable services, such as security and home banking, revenue will have to be apportioned to those services. The ITC will need to be satisfied that the apportionment represents a reasonable amount and would not expect it to exceed 50 per cent of the total revenue or the marginal cost of the system or apparatus, whichever is less. The licensee or any connected person must establish and maintain separate accounts sufficient to enable the ITC to identify and assess qualifying revenue.

2.14 Installation charges do not form part of qualifying revenue. However, where a licensee includes in the installation package the provision of services for a trial period, the ITC will impute a value for the amount which would have been received by reference to the terms and conditions relating to subscriptions.

2.15 Revenue derived from non-programme services, for example telecommunications services and interactive services such as security and home banking, are not counted for the purposes of qualifying revenue.

2.16 Details of the arrangements for ascertaining and collecting tender payments based on qualifying revenue and their accounting treatment will be given in a revised edition of Statement of Principles on Qualifying Revenue which the ITC is required to publish after consultation with the Secretary of State and the Treasury. The ITC has not yet (November 1993) completed that consultation process and, therefore, the definition of qualifying revenue given above may be subject to change.

Fees

2.17 The ITC will charge an application fee which will be on a sliding scale related to the size of the licence area advertised. The amount payable is given in the specification for the area advertised. This will not be returnable to unsuccessful applicants.

2.18 In addition, successful applicants will be required to pay an annual licence fee on grant of the licence to the ITC to enable it to meet its own costs. This will be on a scale (to be reviewed annually) which is related to the size of the licence area. The scale of fees for 1994 is as follows:

	£
1,001 - 10,000 homes passed	1,100
10,001 - 20,000 homes passed	2,150
20,001 - 50,000 homes passed	3,150
50,001 - 150,000 homes passed	3,950
150,001 - 250,000 homes passed	4,700
250,001 - 350,000 homes passed	5,850
Over 350,000 homes passed	6,650

This tariff will be reviewed annually.

For details of fees in respect of the licences granted under the Telecommunications and Wireless Telegraphy Acts, see paragraphs 4.11 and 5.09 respectively.

Ownership prohibitions

2.19 Under the Broadcasting Act, certain persons are prohibited from holding local delivery licences or from controlling the companies which do. The prohibited classes are as follows:

- a) a local authority
- b) a political body
- c) a religious body
- d) any company controlled or unduly influenced by any of the above or by their officers or associates or in which they hold more than a 5% interest
- e) the BBC or the Welsh Fourth Channel Authority or any company in which they hold any interest

- f) an advertising agency or any company controlled by such an agency or in which it holds more than a 5% interest
- g) a company in which the Channel 3 licensee or a local radio station in the same area holds more than a 20% interest or which holds more than a 20% interest in the Channel 3 licensee or the local radio station
- h) a company in which the proprietor of a local newspaper in the same area holds more than a 20% interest or which holds more than a 20% interest in the local newspaper.

Content of applications

2.20 30 copies of each complete application will be required. In addition, a further 30 copies of Part I (Sections A, B and C), which will be available to the public, are also required. Section D will remain confidential to the ITC and its advisors and will not be published. The application documents must be accompanied by the application fee specified by the ITC. Every application must be in the following form.

Part I

Section A

Details of the applicant, or, where a partnership or body corporate, its partners, shareholders and directors and structure or control (there will be a formal ownership questionnaire and declaration to be completed prior to grant of licence).

Section B

A technical plan indicating:

- i) the parts of the franchise area which would be covered by the service, including a detailed A4 or A3 map at 1:25000, 1:50000 or 1:100000 as appropriate showing that coverage area.
- ii) the timetable in accordance with which that coverage would be achieved. Applicants should note that this timetable will be incorporated in any Broadcasting Act licence subsequently granted to the applicant.
- iii) the technical means by which the coverage of the area would be achieved, that is, whether by broadband cable, SMATV systems, MVDS or a mixture of these. Sufficient information is required in accordance with Parts IV and V of these notes to permit the consideration and issue of licences under the Telecommunications Act and Wireless Telegraphy Act.

- Where detailed information under this subsection B(iii) is provided that is commercially sensitive it may be included as an additional confidential section (which should be bound in Part II together with Section D), cross-referenced from this section, but nevertheless sufficient information must be provided in Part I Section B(iii) to enable a general assessment of the technical means of delivery that is proposed.
- iv) the extent if any to which the applicant proposes that the provision of the service should be sub-contracted to anyone else.

Section C

A statement as to the applicant's cash bid in respect of the licence, in the form at Annex 3.

Part II

Section D

1. For the purposes of this section all tables and other projections should be provided on the basis of complete calendar years (ie, ending 31 December). Where information can be provided for part of a year only, a note on the period covered should be included. All monetary values should be expressed in constant 1994 prices, in pounds sterling.

2. The applicant should provide a business plan and financial projections for the full duration of the licence. These must demonstrate how the applicant expects to sustain the proposed service over the licence period and should include profit and loss, cash flow and balance sheet projections.

3. Details of services which are an integral part of the business but which fall outside of the scope of the Local Delivery Licence (for example the provision of telephony services) should be separately identified wherever possible in the business plan and projections.

4. Details of the basis on which any joint income or costs (and joint or common cash) have been allocated must be provided. Joint income would include, for example, subscription and equipment rental fees which encompass payments for both television and telephone services. Joint costs may include network operating costs, overheads, interest charges, etc.

(a) Profit and loss projections

5. Comprehensive annual profit and loss projections should be given for the full period of the licence. A layout which all applicants are asked to use, identifying the minimum level of information required, is given in Annex 2.1.

6. Income from programme services should be broken down according to the nature of the payments received (subscriptions, pay-per-view, etc). Income from other sources, including telephone services, should be separately identified.

7. Full details of, and the basis for, all significant assumptions should be provided including:

(i) Income

- the rate at which the network is built in terms of homes passed in each year of the licence period. Details should also be provided of the communities covered in each year;
- the number of subscribers (penetration per homes passed) in each year of the licence period,
- tariff details, including the prices charged to subscribers for individual and combinations of programmes, for equipment rental and for installation/connection;
- provision for specific bad debts (which are an allowable deduction from qualifying revenue). Applicants should also provide a note on the arrangements he proposes to introduce for debtor control, particularly in relation to individual subscribers.

(ii) Expenditure

- the depreciation policies;
- the dividend policy;
- the handling of pre-operational and development expenditure (see paragraph 8 below);
- staff costs (see paragraph 9 below); and
- the cost of bought-in programmes.

(iii) Interest rates on borrowings and deposits; and special lending arrangements, including any inter-Group loans and caps/floors on borrowing rates.

(iv) Tax rates and capital allowances.

(v) Exchange rates where significant foreign currency expenditures are made or where foreign investment is used.

Notes:

- (1) Where the applicant is part of a group, any management or other inter-group charges should be identified. Where the applicant intends to use the

resources of an existing licence, details should be given of any contributions to costs which will have to be met.

- (2) The applicant should also state whether the projections have been prepared on the basis that the licence will remain in force for the initial fifteen years only or will be renewed.

Pre-operational and development expenditure

8. The applicant should provide in a separate note the proposed pre-operational expenditure in the period up to the commencement of the licence, together with a note of subsequent development expenditure, and its timing, relating to the build programme. The notes should be in both expenditure and cash flow formats. The proposed accounting treatment of pre-operational and development expenditure should also be indicated. The format of the notes on pre-operational and development expenditure is for the applicant to decide, but they should include at least the following headings:

- staff and related costs;
- premises;
- capital expenditure on technical equipment;
- capital expenditure on other equipment;
- other facilities costs;
- cost of programming; and
- press, publicity, and marketing.

Staffing policy

9. The applicant should also provide in a separate note the proposed arrangements for staffing during both the construction and operation phases. Details on the levels of employment and use of contract staff should be given for each of the major activities such as engineering, sales and marketing, customer service and administration.

(b) Cash flow projections

10. The applicant should provide detailed cash flow projections covering the full fifteen-year term of the licence and any pre-operational period. From the award of the licence until the end of the second complete calendar year following the commencement of the licence the projections should be provided on a quarterly basis. Thereafter the projections should be on a calendar year basis until the 31 December following the end date of the licence.

11. The format of the cash flow statement is a matter for the applicant to decide but should include as a minimum the headings set out in the illustrative form shown in Annex 2.2. For each quarter or year the applicant should indicate the maximum level of borrowings drawn under all facilities where the level is not the same as the balance at the end of the quarter or year.

(c) Balance sheets

12. Irrespective of his chosen year-end, the applicant must provide projected balance sheets as at the start and end dates of the proposed licensed service, and at each intervening calendar year-end.

Note:

Balance sheets should follow the form required for the purposes of UK audited accounts (in the case of an applicant not incorporated in the UK adjusted balance sheets in this form should be provided). Balance sheets up to and including 31 December 1997 should include the principal notes required for the purposes of UK audited accounts, and for subsequent years those notes which the applicant considers material to an understanding of its financial position.

(d) Sensitivity tests

13. The applicant is asked to conduct five sensitivity tests in the form of revised versions of the Profit & Loss projections and the Cash Flow and Balance Sheet projections. In the first instance, the revised projections should reflect only the effects of the sensitivity test being considered. The applicant should also provide supporting commentary to explain how he would accommodate any variance arising from the test in his construction plans, profitability, and cash flow.

Each of the following variants to the applicant's main projections should be considered separately:

- (i) penetration in each year is only 90 per cent of the base case levels;
- (ii) the average revenue received per subscriber is 10 per cent lower than the base case in each year of operation;
- (iii) programme costs are 10 per cent higher than the base case in each year of operations;
- (iv) a combination of (ii) and (iii) above;
- (v) a slower rate of network build results in a one year delay in the connection of the first subscriber. The applicant should explain what subsequent action would be taken, if any, to accelerate the build programme and the consequences of this.

Note:

All percentages are expressed in real terms (ie they should be applied to revenues and costs which are stated in constant 1994 prices).

14. The applicant should provide any other sensitivity tests, with supporting written commentary which he believes may be relevant or of assistance in providing an understanding of his business plans.

(e) Audited accounts

15. If the applicant is an established company, he should provide the audited accounts of the applicant company for the most recently completed financial year. If these are not yet available, audited accounts for the previous financial year, together with any interim financial statement, and draft accounts or management accounts for the most recent financial year should be provided. If the applicant is not an established company he should contact the ITC as early as possible to discuss the applicant's particular circumstances and shareholding structure so as to determine what accounts should also be provided.

Note:

If the applicant's financial position is supported by a guarantee, the latest available audited accounts of the guarantor should also be provided.

(f) Accountant's letter

16. The applicant should provide a letter from a firm of accountants, practising in the UK, providing an opinion that the projections, including the sensitivity tests, have been properly prepared on the basis of the assumptions stated, and that the accounting policies have been properly and consistently applied throughout the licence period.

(g) Funding arrangements

17. The applicant should describe as clearly as possible the flexibility of his funding arrangements, including any alternative arrangements which may be available to him. The following details of his financing structure should be provided:

(i) full details of the equity share capital of the company, including:

- (a) the par value of the shares;
- (b) the number of authorised and issued shares;
- (c) the voting and dividend rights attaching to the shares;

(ii) full details (as above together with conversion and other specific rights) of any other share capital in issue, including all forms of preference shares, convertible loan stock, options, or warrants;

- (iii) full details of all borrowing facilities available to the company and the extent to which they are currently drawn down, including, inter alia, overdraft facilities, revolving credit facilities, term loans, mortgage and hire purchase facilities, finance and operating leases, and any inter-company loans from any other member of the same group. The details should include the amount and terms of all borrowings (repayment details, covenants, etc.), any security provided and charges against company (or other group company) assets, and the names and addresses of lenders of and guarantors to any of the facilities; and
- (iv) full details of any contingent liabilities and off-balance sheet financing arrangements.

Notes:

- (1) Where the applicant proposes to raise new debt, in whatever form, he should provide written evidence that in principle such arrangements are available. This should be in the form of a letter of intent from the principal lenders, covering the following points:-
 - the amount, type and duration of the facility;
 - the drawdown schedule;
 - the approximate costs of the facility, within an indicative range;
 - any security or guarantee required in support of the facility;
 - full details of any conditions precedent;
 - the principal covenants (including specific details of cover ratios);
 - details of warranties and undertakings given under the financing agreements and details of events of default; and
 - the length of time required to put the facility in place, including details of any due diligence or prior obligations which would need to be met for the financing to be available.
- (2) Where the applicant proposes to raise new equity finance, he will be required to provide written evidence that arrangements for the provision of new equity are achievable. For example, where the applicant intends to raise new capital in the market, he should provide a comfort letter from financial advisers or stockbrokers confirming that such a capital-raising exercise would be possible assuming